

MORGENSTADT: CITY INSIGHTS

## MORGENSTADT VALUE OF DATA

ACCELERATING THE SUSTAINABLE DEVELOPMENT OF CITIES






---

## Motivation

---

Current best practices and approaches to urban data still need to display the **cross-sectoral integration** and synergetic optimisation of a range of infrastructure systems and urban services, which are enabled by **digitalisation** and current advances **data technologies**. Furthermore, our societies produce large quantities of diverse data, however, the full value and potential of that data is still largely unknown. On the level of municipalities, there is a clear gap in understanding the full positive consequences and impacts of a potential investment in datasets, data platforms and the usage of algorithms and other analytical tools to extract that potential. Last, companies lack behind in fully grasping how their respective data could create a larger value for a city, within which the companies operate and whereby their employees often live.

In cities public infrastructure, public space, air, water, greenery, traffic flows, public safety, street lighting etc. are common goods or merit goods that are subject to rivalry and therefore need to be governed. In the smart city these goods are becoming linked through another good, whose nature is ambiguous: data. Data is sometimes open (public good), sometimes restricted and sometimes only accessible for its owner (private good). Since data is the basis of public services and urban development in the smart city, this circumstance exponentially increases the complexity of public value creation, smart city investments and urban governance. New data-driven business models by private companies, provide free access to services and infrastructure and capitalize on the data that is generated through this process. Other models provide digital urban services on a pay-per-use model, questioning which goods and services are public and which are private in a city.

Through an intelligent use of data social inequality in cities can be enhanced or mitigated, access to services can be made easier for all or restricted to the rich. Through the use of data, public service provision can be made more efficient and public investment generate higher returns. But how do we know the value that sits behind one data set or a combination of data sets? How do we know the actual price of a data set, and under which conditions investments in data pay-off for cities and municipal companies?

The urban data market today is still in an **exploratory phase**. There are no universally accepted approaches that would enable cities to fully understand the value of data and their **entire potential** for a sustainable and smart urban development. While governments ought to become more deterministic in their data strategies, setting up a system to **govern the data** innovation transmission and exchange is absolutely crucial. Furthermore, a comprehensive city data architecture is yet to be constructed and data-driven business model that address urban negative externalities are yet to be tested and proven.

It is for this reason that Fraunhofer IAO proposes to shed light on the value of urban data. Together with selected municipalities, data-producing companies, finance institutions and research, Fraunhofer IAO will organize a joint research initiative that identifies the greater value of urban datasets and transforms it into pricing and investment schemes.





Photo: © peshkova- Fotolia

The proposed research offers to provide in-depth insight into the untapped potential that lies within Smart City data. Moreover, the research will attempt to help cities strike the right balance between monetisation for value and monetisation to create an equitable data market place. The prospective users of the outcome are both public sector actors such as city administrations, as well as private sector stakeholders, such as financial institutions, industry and others. The research will focus on the complexities of the value of data and will develop the following deliverables:

- An overview and description of data-based use cases for cities (both holistic data platforms as well as already well-functioning business models)
- Development of a data value model for and with cities
- Application of the data value model to the selected use cases in reference cities
- Pilot projects with selected urban data marketplaces to evaluate best models for pricing and transaction of urban data.

*“Organising data so that it consistently and systemically plays its part in the optimisation of social, economic and environmental potential of cities and communities is very much a work in progress. Core to speeding up this organising process is quantifying the value of what is done with data emerging from a variety of sources – from household, to corporation, to government. This is of course different from data monetisation, and charging for data in the narrowest sense. It is not that we should rule these out in the city data economy, but rather arrive at a sensible and widely agreed means of doing so, once we have fully captured the value of data in new business models. There are two important aspects to these business models in London’s thinking right now. How do you use well organised ‘city data’ in a ‘one time only’ data science exercise to meet specific policy challenges; and how do you use that same data on an ongoing and sustainable basis, to enhance city operations and directly influence quality of life.”*

Andrew Collinge,  
Director of the Greater London Authority

---

### **Morgenstadt Research "Finance, Insurance and Governance of Smart Cities"**

---

While some cities have started focusing on data more closely, there is a general absence of a system of capturing value and capitalising on potential that can be derived from a better understanding of urban data. As a result, the Fraunhofer IAO proposes a research, which aims at developing a data value model. This highly replicable instrument will provide a unique insight into how shared value can be created through data, who are the key beneficiaries and what are the direct, indirect and diffused impacts. Last, the instrument would enable to better position urban policy whether in a regulatory manner or through incentives to mobilise the full potential and value of data and ideally monetise it accordingly. Ultimately, the value model would place the city at the centre of management of the urban data market and help structure public-private investment schemes for urban data system.

## Public Sector – Municipalities

- Will be able to harvest full potential of local data through the data value model
- Will be able to recognize the value of city data
- Will be enabled to independently determine the value of data sets and solutions
- Active and Effective governance will be enabled by data-driven approaches and interventions
- Will interact with private companies that can jointly provide solutions
- Expand understanding of best practices and approaches from different cases
- Can receive individual support for the piloting of innovative financial instruments, insurance and their governance

## Private Sector

- Gain insight into the current challenges of municipalities in the area of city data and its value
- Position their approach (marketing and sales) to better suit the needs of the public sector as well as private clients such as property developers
- Develop agile project management for cities, while concentrating on the interface between specific technologies of the technology providers and cities as end-users
- Gain insight into existing best practices and approaches from competing subjects as well as innovative cities
- Will have the opportunity to interact with municipal authorities and municipal companies during the course of the research
- Can receive individual support in the development and testing of new funding models and insurance schemes
- Will be able to work with cities on organising city data for greater impact



---

## Project structure

---

The joint platform for sharing data and understanding values and impacts will be set-up and operated through Fraunhofer IAO and Fraunhofer FOKUS. It will ensure interoperability based on EU standards and provide data security and data protection for all partners. The joined consortium will share own data for research purposes. There is no reimbursement for data involved in this project. Project partners are requested to sign an NDA.

The Morgenstadt joint-up research project is based on the following 6 work packages, which are coordinated and managed by the Fraunhofer IAO team.

### WP1: Identification of data sets and make data usable on a pilot platform

The purpose of this work package is to make sure that all the relevant and complementary data sets are thoroughly identified and gathered. Upon the completion of this first step a pilot platform will be developed to enable the comparable and usable data to be located and subsequently managed in once place. Partners will be invited to provide own data to a secure project platform.

### WP2: Identification of potential use cases for cities and municipalities

Partner cities with cutting-edge strategies and approaches towards their urban data management and usage will be approached in order to set out potential data use cases that would unlock significant shared value. These cities include London, Amsterdam, Berlin, Copenhagen and Dublin. Facilitated by research additional use cases will be identified and described.

### WP3: Improvement of data-sets corresponding to use cases

In this work package, the identified data sets will be adjusted to better suit the needs and requirements of the particular use-cases within each of the cities. Furthermore, the data will be refined within each of the data sets to ensure their full usability and impact potential.

### WP4: Develop a valuation model to estimate and measure effects and impacts (derived benefits) from the particular use cases

A data valuation model will be developed in order to assess the various value streams stemming from the data. Value creation areas associated with the use-cases will also be identified and recommended for follow-up. Also the potential for trading and exchange of data (with a focus on prospective monetisation) will be reflected in the model.

### WP5: Cost-benefit model for urban data

The different costs and benefits of data refinement, interpretation and application will be quantified (as well as qualified). Key barriers to the usage of urban data within the respective cities will be clearly defined and recommendations for overcoming these will be provided.

### WP6: Price modelling and a trading model of data

A price modelling exercise with a focus on the monetary value of data will be performed. Data value capture and relevant instruments will also be recommended to ensure that the value of data is territorially-bound, while increasing the local competitiveness.



## Morgenstadt Research "Finance, Insurance and Governance of Smart Cities"

Last, the instrument would enable to better position urban policy whether in a regulatory manner or through incentives to mobilise the full potential and value of data and ideally monetise it accordingly. Ultimately, the value model would place the city at the centre of management of the urban data market and help structure public-private investment schemes for urban data systems.

While some cities have started focusing on data more closely, there is a general absence of a system of capturing value and capitalising on potential that can be derived from a better understanding of urban data. As a result, the Fraunhofer IAO proposes a research, which aims at developing a data value model. This highly replicable instrument will provide a unique insight into how shared value can be created through data, who are the key beneficiaries and what are the direct, indirect and diffused impacts.

### Target group

The Morgenstadt joint-up research project is aimed at municipalities that are determined to pursue measurable progress in exploring new funding models, utilising the maximum potential of data, while capturing its value, grasping the benefits of Smart City insurance and repositioning digital governance approaches.

The research is equally important to financial, banking and insurance institutions that are seeking to invest in sustainable and innovative urban projects, while striving to improve their portfolio of products to better suit the current demand from cities and others alike. It also addresses companies who want to better understand the value of their own data-sets for cities, how to monetize them and how to integrate them in larger urban development projects.

### Run-time of the project

At the moment approximately two years are foreseen as the entire project duration.

### Conditions and price

The research project will be based on a joined funding model:

- Private companies and finance institutions: 75 000 EUR
- SME's and Large cities (>750 000 inhabitants): 37 500 EUR
- Medium sized cities (>100 000 inhabitants): 20 000 EUR
- Start-Ups and small cities (<100 000 inhabitants): 15 000 EUR

### Fraunhofer Institute for Industrial Engineering IAO

Nobelstrasse 12  
70569 Stuttgart, Germany

#### Contact

Petr Suska  
phone +49 711 970-2198  
petr.suska@iao.fraunhofer.de

[www.morgenstadt.de](http://www.morgenstadt.de)